

Date: Wed, 23 Mar 94 04:30:53 PST
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V94 #70
To: Ham-Homebrew

Ham-Homebrew Digest Wed, 23 Mar 94 Volume 94 : Issue 70

Today's Topics:

 Circuit simulation software for teaching
 How to make a Phonepatche?
 Need Dayton room
 QSK
 Simple Tx/Rx?
 What is third order intercept ?
 Whats the loss across a BNC to PL259 ?

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>

Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>

Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Tue, 22 Mar 94 08:15:31 MST
From: news.cs.indiana.edu!lynx.unm.edu!dns1.NMSU.Edu!dns1.NMSU.Edu!
usenet@purdue.edu
Subject: Circuit simulation software for teaching
To: ham-homebrew@ucsd.edu

On 18 Mar 1994 15:32:58 -0500, Stephen B. Brown wrote:

>
> I'm conducting a survey about the use of computer programs for digital
>and analog circuit simulation in ee curricula. I'd like to know what
>software is being used at other universities, what platforms it's run on,
>what level (undergraduate/graduate) students are using it, and what problems
>other ee departments have had making this kind of software available for
>instructors and students.

Steve: We are using B^2 Logic and B^2 Spice by Brown Bag Software here

at New Mexico State U. The logic program is pretty good and will run on any level DOS machine. The version of Spice they have is full of bugs and runs under windows. 73 AA5ZQ-Bill

Date: 23 Mar 94 04:41:57 GMT
From: ihnp4.ucsd.edu!swrinde!cs.utexas.edu!news.tamu.edu!mtecv2.mty.itesm.mx!
al152511@network.ucsd.edu
Subject: How to make a Phonepatche?
To: ham-homebrew@ucsd.edu

Hello, all

I am looking for a phonepatche for my CB and 10 meter radios, just like one of a fellow ham.

This is a manual device, the size of a little box, atached to the phone and to the rig, and my friend told me it costed him about \$50 U.S. Dlls., but I have not been able to find it anywhere, and would like to know if it is too dificult to build it at home.

How can I build this thing?
Some time ago, I posted this same question, and somebody told me it can be made from some kind of old telephone.

Muchos Thanks in advance

Date: 22 Mar 1994 23:09:44 -0500
From: ihnp4.ucsd.edu!usc!howland.reston.ans.net!news.intercon.com!udel!
news.udel.edu!brahms.udel.edu!not-for-mail@network.ucsd.edu
Subject: Need Dayton room
To: ham-homebrew@ucsd.edu

Please forgive the cross posting if you will.

I need a room for two for Thursday, Friday and Saturday night at Dayton. We have one room at the Hampton House with the FRC, and want one more closeby if possible.

CU at contest forum and dinner, FRC suite, hamfest etc.

Tnx Bob

--
Bob Penneys, WN3K Frankford Radio Club Internet: penneys@pecan.cns.udel.edu

Work: Ham Radio Outlet (Delaware) (800) 644-4476; fax (302) 322-8808
Mail at home: 12 East Mill Station Drive Newark, DE 19711 USA

Date: 22 Mar 94 23:04:31 GMT
From: news-mail-gateway@ucsd.edu
Subject: QSK
To: ham-homebrew@ucsd.edu

>Hi all, I hv a Heath SB1000 (Ameritron AL80A), that I wud like to add QSK to.
>All the QSK kits are a bit expensive for my taste, but I was wondering. Is it
>just the speed of the internal relay that keeps this thing from being QSK?
>Afterre
>ading Richard Measure's (SP?) article in QST, if I just replace the internal
>relay with a high speed vacum relay (Jennings) will I be able to run it in QSK
>or are there other restraints. Tnks for any help you can give.
>
>DE KA3PLS

You are referring to the article by Rick Measures, AG6K, in January 1994 QST,
titled "The Nearly Perfect Amplifier."

I just finished implementing Measure's QSK, electronic bias switching, and
variable bias voltage circuits into my home brew amplifier. The results are
outstanding. It was relatively easy to do, it can be outboarded to an existing
amp, as mine is, and it works flawlessly. This guy sure knows his amplifiers!

I built the unit using his exact values for the timing circuits and was amazed
at the results - quiet and smooth operation and absolutely NO hot switching.
I tested the unit using a multiple channel, 4 trace, scope. I used the key
closure as the primary trigger and viewed the timing of the exciter and output
relays. Here are the results.

I found that with his *optional* make delay circuit, 1k-ohm resistor & 1ufd cap
across the exciter reed relay (Kenwood replacement) closed about 0.8 ms
(800 usecs.) after the RJ1A Vacuum relay did. When going from transmit to
receive the vacuum relay stayed closed for about 1.2ms (1200 usecs) after the
exciter relay opened.

The one thing I did differently was, to use a readily available 42VDC power source
for the relays instead of the 80-120VDC source he calls for. The use of a
higher than normal relay voltage (with current limiting) is a common relay
"speed-up" technique. Instead of seeing 80ma of current being drawn by the
relays upon closure I see somewhere around 70ma - no big whoop.

As for the opto-electronic bias switching, it too is smooth and on the air
reports confirm that it sounds very clean, unlike common commercial EBS circuits.

The bias voltage selection is done with an 11 position switch which I found in the proverbial junk box. Instead of using silicon diodes, as called for in the article, I had a bunch of 3.3V, 5 watt, zeners I put into service. I have 12 in series which provides about 40V of bias at the maximum voltage I run on my amplifier. The tubes are 4-400s (3 in GG) and with 4KV resting voltage on the plates the idling current is about 80 ma. When I run the amp at reduced power and drop the operating voltage to 2.5KV, I can readily adjust the idling current back to a nominal 80-100 ma. by adjusting the bias switch.

All in all, Mr. Measure's recommendations and earlier articles have been of great value and inspiration to me in my amp building projects.

73 & Happy building,

Walt Kornienko - K2WK
waultk@pica.army.mil

P.S. If you are interested I know of a source for RJ1A relays at a reasonable cost. Email me directly and I'll give you the poop.

Date: Tue, 22 Mar 1994 08:29:42 GMT
From: netcomsv!netcom.com!phr@decwrl.dec.com
Subject: Simple Tx/Rx?
To: ham-homebrew@ucsd.edu

In article <Cn11B0.Hx2@news.ess.harris.com>,
Greg Segallis <gsegalli@ic1d.harris.com> wrote:
>I want to build an RF remote shutter release for a camera.
>I have seen several designs for simple transmitters (CW, tone
>transmitters, etc.) They are simple (just a few parts, with
>coils I can wind myself), small and cheap to build. They seem
>to have adequate power for this application.
>
>What I havn't seen is a simple receiver circuit.
>If you have any ideas/designs/schematics for simple receivers
>or TX/RX pairs please email or post them.

Get yourself a pair of cheap toy walkie talkies equipped with a morse code key. Hack the speaker output of one of them to feed into a 567 tone decoder tuned to the audio freq. of the morse code beep, and use the 567 output to trigger your camera. Then just push the morse code button on the transmitting HT in order to fire the shutter. Then you don't need to build either the transmitter or the receiver. Just hack 3 or 4 parts into the cheap HT, which usually has plenty of room inside, even

the micro miniature kind. The cheap HT's are about \$10-15 a pair (or hit a garage sale), plus the tone decoder is around \$2 in parts. Alternatively, pay \$1000+ for something similar from Nikon...

Date: Wed, 23 Mar 1994 08:34:17 GMT
From: lerc.nasa.gov!news.uakron.edu!malgudi.oar.net!witch!ted!mjsilva@purdue.edu
Subject: What is third order intercept ?
To: ham-homebrew@ucsd.edu

In article <2mnllu\$73k@agate.berkeley.edu>, Ronald Viegelahn (ron@etch-eshop.Berkeley.EDU) writes:

>
>
> Hi,
>
> I keep hearing the term " third order intercept " when speaking
> of frontend intermod problems.
>
> I assume that it has something to do with how the input is biased,
> be it a FET or GAsFet or whatever.
>
> Would some kind sole care to explain this ?
>
>

Well, I'm an air breather, but I'll try. At least if I get it wrong it will flush out a better answer!

Third-order refers to certain distortion products from an amplifier being fed two equal-amplitude signals at some (small) frequency difference. These two frequencies can correspond to any two frequencies in the modulating signal, though for testing I think 400Hz and 1000Hz are standard. The "3rd-order" products are those frequencies $2F_a - F_b$ and $2F_b - F_a$. ("3rd" because $2+1=3$) Note that since F_a is close to F_b , these products will be within the passband of the amplifier, and cannot be removed once generated (e.g. an USB two-tone signal at (carrier) frequency 1000kHz will produce signals at 1001 kHz (F_a) and 1000.4 kHz (F_b). The passband would be perhaps 1000.3 kHz to 1002.7 kHz. The mixing product $2F_a - F_b$ is 1001.6 kHz, which is in the passband of the amplifier.) Other mixing products, such as $3F_a - 2F_b$ will also be in the passband, but the lower harmonics are stronger and produce the strongest product.

It is a mathematical fact, which I can't prove, that these 3rd-order products increase in amplitude three times faster (logarithmically) than

the desired output signal, as the input signal is increased. Thus if you draw a graph of input and output with both scales in db, the desired output signal will have a slope of 1 (10 db increase in input produces 10 db increase in output), while the 3rd-order output will have a slope of 3 (10 db increase in input produces 30 db increase in output). The 3rd-order output will start out very much lower than the desired output with a low input, but, rising at a faster rate, at some point it will "intercept" the desired output. That is the 3rd-order intercept point. It refers to both an input level and an output level, depending on what you're interested in.

Note that due to gain compression the desired output signal may not be capable of being driven to the intercept level. It's the extrapolated output level that is used. A higher 3rd-order intercept means the amplifier can handle a stronger signal without serious 3rd-order distortion.

Have I made things better or worse?

73,
Mike, KK6GM

Date: Tue, 22 Mar 1994 18:00:02 GMT
From: portal.com!portal!combdyn!lawrence@decwrl.dec.com
Subject: Whats the loss across a BNC to PL259 ?
To: ham-homebrew@ucsd.edu

In article <2md38c\$6rq@edwin.bga.com> miltonm@bga.com (Milton D. Miller II) writes:

>Not a very scientific survey, but I have noticed that while
>adapters with BNC male and UHF female are ok, the ones that
>have BNC female and UHF male are create horrible SWR on my
>power meter. Has anyone else seen this?
>

That's interesting....my BNC male to UHF female....had a horrible affect on my SWR. Replacing the it with a UHF coupler, a UHF male to BNC female and a 4' section of RG58/U with BNC males made a big difference....it also allowed to put the HT in a better position next to my computer (next to an extra muffin fan to keep it cool too).

--

WORK: lawrence@combdyn.com | PHONE 403 529 2162 | FAX 529 2516 | VE6LKC
HOME: dreamer@lhaven.uumh.ab.ca | 403 526 6019 | 529 5102 | VE6PAQ

Praxis BBS - 529 1610 | CYSNET BBS - 526 4304 | Lunatic Haven BBS - 526 6957

disclamer = (working_for && !representing) + (Combustion Dynamics Ltd.);

End of Ham-Homebrew Digest V94 #70
